Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Access Charge Reform	)	CC Docket. No. 96-262
	)	
Price Cap Performance Review for Local Exchange Carriers	)	CC Docket No. 94-1
	)	
Transport Rate Structure and Pricing	)	CC Docket No. 91-213
	)	
Usage of the Public Switched Network by Information Service and Internet Service Providers	)	CC Docket No. 96-263

COMMENTS OF AT&T CORP.

Mark C. Rosenblum
Ava B. Kleinman

Room 3252J1
295 North Maple Avenue
Basking Ridge, New Jersey 07920
(908) 221-8312

Gene C. Schaerr
James P. Young

1722 Eye Street N.W.
Washington, D.C. 20006
(202) 736-8141

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SUMMARY

As the Commission notes in the Notice of Inquiry, the proliferation of new packet-switched services offered by information service and Internet service providers now warrants reexamination of existing regulations regarding information services. The demand for packet-switched data services is growing rapidly, and the information services industry is growing rapidly to meet that demand. But information and other enhanced service providers (collectively, "ESPs") today still use the public local switched network to deliver dial-up services to their customers.

The public switched local network, however, is neither designed nor priced to carry data traffic efficiently. And, as demand continues to grow, packet-switched access networks will be necessary to carry this data traffic. The Commission's current policies have not facilitated the deployment of such networks and have, in fact, created artificial incentives to use existing, circuit-switched networks inefficiently. These failures are due in part to the ESPs' exemption from the obligation to pay federal access charges, even though ESPs clearly use interstate exchange access just as interexchange carriers do.

Contrary to the arguments of some local exchange carriers (LECs), however, the solution is *not* to subject ESPs to the same inflated and subsidy-laden access charges currently paid by IXCs. For reasons explained by AT&T in its comments in the Commission's access charge proceeding, those charges should be set at a level equal to the LECs' total element long-run incremental cost of service (TELRIC) -- for everyone,

including the IXCs. But even if the Commission forces some carriers to pay access charges in excess of TELRIC, it should not force the ESPs to do so.

On the other hand, the ESPs' blanket exemption from access charges no longer produces benefits that exceed its costs to the public. The Commission granted ESPs this exemption in 1983, but only as a transitional measure, and only because imposition of subsidy-laden access charges on ESPs would have likely resulted in severe rate impacts. Fourteen years later, however, ESPs have grown dramatically and can afford to pay *TELRIC-based* charges for their use of the local network.

Imposition of TELRIC-based access charges on ESPs will not require significant rate increases to consumers, but will remove most of the inefficiencies and perverse effects of the current system. First, under that system, access services provided to ESPs are not priced efficiently. In particular, ESPs typically buy access as a flat-rate business line from state tariffs. This provides an artificial incentive to continue loading data traffic onto the existing public switched network, even though public switched networks cannot handle such traffic efficiently. Second, the current system blunts the incentive to build more efficient packet-switched access networks, because the exemption keeps access through the public switched network priced artificially below-cost. And third, ending the blanket exemption will facilitate consideration of whether and how ESPs should participate in fostering the goal of universal service.

By contrast, pricing the existing network at cost will give both the incumbents and competitors the incentive to build more efficient packet-switched access networks.

Moreover, although network congestion is clearly not a problem today, TELRIC-based, traffic-sensitive pricing will send appropriate economic signals and thereby help deter any potential network congestion. And cost-based pricing will protect the universal service contribution base, by stanching the flow of *artificially induced* migration of traffic from the public switched network to the Internet.

Cost-based access charges will not harm the enhanced service industry. Analysis of information provided by CompuServe in the access reform proceeding shows that the transition from state-regulated business lines to TELRIC-based interstate access charges would increase CompuServe's costs by only 56 cents per customer per month. Such an increase will not materially affect overall demand for ESPs' services (assuming the increase is passed on to customers) and, in all events, would not impose significant financial harm upon ESPs operating in competitive environments. Requiring the ESPs to pay cost-based access rates also will not provide a windfall to the incumbent LECs because the Commission can (and should) adjust their price caps to reflect this exogenous increase in revenue.

Finally, there can be little doubt that most ESP services fall squarely within the Commission's jurisdiction. Particularly with respect to the Internet and online services, ESPs and LECs are incapable of dividing the traffic into interstate and intrastate communications, and therefore such services are "inseverably" interstate. Such traffic is therefore fully subject to the Commission's jurisdiction.

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COMMENTS OF AT&T CORP.

Pursuant to the Commission's December 24 Notice of Inquiry ("NOI"),[1] and its subsequent January 24 Order,[2] AT&T Corp. ("AT&T") hereby submits these comments concerning usage of the public switched network by information service and Internet service providers ("ISPs").

INTRODUCTION

AT&T welcomes the Commission's effort to determine whether "additional actions relating to interstate information services and the Internet" are warranted in view of the sweeping changes that have occurred in the information services industry in recent years,

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[1] *Usage of the Public Switched Network by Information Service and Internet Service Providers*, CC Docket No. 96-263, Notice of Proposed Rulemaking, Third Report and Order, and Notice of Inquiry (released December 24, 1996).

[2] *Usage of the Public Switched Network by Information Service and Internet Service Providers*, CC Docket No. 96-263, Order (released January 24, 1997).

and in light of the Commission's ongoing access reform and universal service proceedings. NOI at ¶ 312. AT&T agrees that the time has come to examine the extent to which advances in technology, and the proliferation of new digital services accessed through the circuit-switched networks of the LECs, warrant changes to the regulation of local exchange and exchange access services.

Recent technological and market developments make such an examination both timely and necessary. New information services based on packet-switched technology are becoming increasingly available to American consumers and businesses on a dial-up basis over their residential and business narrow-band phone lines, creating enormous demand for packet-switched higher-speed data services. The information services industry is growing exponentially to meet this growing demand.

Nevertheless, the packet-switched local networks that would be capable of providing those services efficiently have not yet emerged. As a result, these packet-switched services continue to utilize the local public circuit-switched network, which has not been expanded to accommodate, and in all events is not designed or priced to provide, efficient data services. Accordingly, it is becoming increasingly clear that existing regulatory policies neither "facilitate the development of the high-bandwidth data networks of the future" nor "preserv[e] efficient incentives for investment and innovation in the underlying voice network." NOI at ¶ 311.

The tremendous growth of packet-switched services -- and the lack of a market-based response to the demand for new networks to accommodate that growth -- exacerbate

the economic inefficiencies of the current access pricing scheme. These inefficiencies can be traced, in part, to the exemption from access charges that the Commission granted to enhanced service providers ("ESPs") in 1983.[3] At that time, the exemption was a reasonable accommodation to the then-fledgling ESP industry. ESPs had been paying for use of the local network by purchasing business lines under state-tariffed rates, in the same manner as MCI and other common carriers that could not obtain full-feature access services from the LECs. The Commission recognized that the newly created interstate access charge structure it developed in 1983 had many uneconomic subsidies built into it, and that access charges would therefore be considerably higher than the business rates the ESPs were accustomed to paying.[4] Thus, even though the Commission acknowledged that ESPs "employ exchange access for jurisdictionally interstate communications," the Commission found that ESPs would "experience severe rate impacts were we immediately to assess carrier access charges upon them," and classified them under its rules as "end users," thereby removing them from carrier access charges.

In granting this exemption, the Commission explained that it would apply only during a "transition" period.[5] The ESP exemption, however, has now been in place nearly fourteen years, even though the Commission has eliminated a similar exemption for data

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[3] In these comments, AT&T generally uses the term ESP to refer to all categories of enhanced services providers, including Internet service providers ("ISPs"), online service providers, and electronic business information service providers.

[4] *MTS and WATS Market Structure*, Memorandum Report and Order, 97 F.C.C. 2d 682, 715 (1983) ("*MTS Market Structure Order*").

[5] *Id.*

and telex carriers.[6] Like those carriers, ESPs are now capable of paying *cost-based* local network charges, which would represent only a modest increase in the rates ESPs currently pay.

Moreover, it is increasingly clear that perpetuation of the access charge exemption to ESPs causes greater public harm -- in the form of market distortions that send the wrong economic signals to network suppliers, network customers, and end users -- than benefit. For example, new technologies have made it possible for ESPs to provide services that were unimaginable in 1983, such as allowing subscribers to make traditional phone calls over the Internet. As a result, enhanced services are beginning to compete directly with traditional telephony -- to the point that an estimated 16 percent of all U.S. long distance traffic will have migrated to the Internet by 2000.[7] And the ability to provide voice and data services over the same packet-switched networks is leading to a rapid convergence in *all* communications markets.

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[6] *MTS and WATS-Related and Other Amendments of Part 69 of the Commission's Rules*, CC Docket No. 86-1, Second Report and Order, 60 Rad. Reg. 2d 1542 (¶ 11) (rel. Aug. 26, 1986) ("As we indicated in the Supplemental Notice, telex and data carriers, like carriers offering MTS/WATS-type services, use ordinary subscriber lines and end office facilities through their dial-up connections, and should therefore pay the same charges as those assessed on other interexchange carriers for their use of these local switched access facilities. We believe that the non-MTS/WATS nature of these services is irrelevant in determining whether these carriers should pay access charges. Our intention in adopting the exemption in question . . . was not to exempt carriers who provide non-MTS/WATS-type services permanently from carrier access charges, but only to grant them some transitional relief.").

[7] John W. Verity, "Calling All Net Surfers," Business Week, August 5, 1996, p. 27.

The growth of these services presents two distinct and important problems. First, the ESPs' use of the LEC networks is not priced efficiently. ESPs use interstate exchange access from the LECs that is the same as to that provided to the interexchange carriers. Yet ESPs still purchase that access by buying flat-rate business lines, because they remain exempt from paying interstate access charges. This irrational pricing system encourages usage patterns by ESPs that may be efficient when occurring over a totally packet-switched network, but are extremely inefficient over the public switched network. The existing system also maintains powerful incentives to continue loading data traffic onto the existing local circuit-switched networks that are not adequate for that purpose.

Second, to carry traffic between the end-user and the ESP's network, the ESPs that provide packet-switched data services must rely on the incumbent LECs' existing circuit-switched networks, which were not designed for data traffic and are not efficient for that purpose. To best accommodate the continued rapid growth of enhanced services, new packet-switched access networks are already necessary. Yet the access charge exemption, in the Commission's words, "hinder[s] the development of emerging packet-switched data networks" by blunting the incentives to build them. NOI at ¶ 311.

To address these concerns, parties have proposed a range of options. At one extreme are the incumbent local exchange carriers ("ILECs"), who have made grossly exaggerated claims that the growth of packet-switched services is causing severe network congestion that threatens the public switched network. Although access charges paid by IXCs already provide the ILECs with billions of dollars every year in uneconomic and unwarranted

subsidies, the ILECs nonetheless ask for additional revenues to respond to what is still only a limited congestion "problem." The Commission should resist the ILECs' efforts to subject ESPs to the same inflated and inefficient access charges that the ILECs currently impose on IXCs.

At the same time, however, the Commission should not simply perpetuate the status quo. If the status quo is maintained, circuit-switched networks will continue to be used inefficiently, thereby creating a risk of greater congestion, and adequate incentives will not be in place to build alternative packet-switched access networks that are more effective for the delivery of packet-switched data services. In particular, prospective new providers will have little incentive to invest in new networks that will compete against the incumbents' artificially inexpensive circuit-switched access. And the migration of long-distance traffic to the Internet based on these distorted pricing advantages will threaten the funding for the Commission's and Congress' universal service priorities.

The Commission should therefore heed the mandate of Congress in the 1996 Telecommunications Act by removing implicit subsidies from access charges and by pricing access elements under a total element long-run incremental cost (TELRIC) standard. When prices for the local network components provided by incumbent LECs are brought down to their true costs, sound economic and regulatory principles will require that *all* users of those services pay the same prices for those access services, regardless of the nature of the communications being transmitted.

But even if the Commission initially maintains the IXCs' access charges above TELRIC levels for other (and, in AT&T's view, flawed) reasons, the Commission should require the ESPs to pay that TELRIC-based amount. This would help reduce the marketplace distortions and unfair advantages that the current system fosters, even while the Commission moves toward a fully cost-based regime. And the tools for calculating TELRIC costs are readily available; indeed, many states have adopted those costing tools today.

In considering these changes, moreover, the Commission should not be deterred by concerns that such a policy would somehow mire the Commission in "regulating the Internet." As a provider of Internet and other online services, AT&T staunchly opposes unnecessary regulation of truly competitive markets, including the enhanced services market.[8] However, the Commission already regulates (through the ESP exemption) the prices of the basic telecommunications services that ESPs currently use as an input in their own services. The substitution of access charges for the flat-rate business lines ESP purchase today will simply replace the current pricing system with one that more accurately reflects the costs imposed by the ESPs and the manner in which those costs are incurred. Requiring ESPs to pay the true economic cost of the telecommunications services they employ thus does not constitute "regulation of the Internet" any more than price regulation

[8] The enhanced services industry is already demonstrating that it can regulate itself in content-related areas, such as individual privacy, primarily through technology solutions that enable customer empowerment and customer choice.

of electricity used at an automobile factory can be said to "regulate" the automobile industry.

In short, AT&T supports cost-based pricing for all users of the network as the most rational, pro-competitive, and efficient means of achieving the Commission's twin objectives in this proceeding, namely, "facilitat[ing] the development of the high-bandwidth data networks of the future, while preserving efficient incentives for investment and innovation in the underlying network." NOI at ¶ 311. As an Internet and online service provider (through its AT&T WorldNet℠ service), AT&T supports the imposition of cost-based rates on all network users because such reform would give both incumbent and prospective local exchange carriers the proper incentives to build the packet-switched networks that AT&T wants for the delivery of its information services. As a potential entrant into the local and exchange access market, AT&T supports that policy because it would eliminate the distortions that currently allow ESPs to obtain circuit-switched access at below-market prices, and thus make investments in newer, competing technologies less attractive than they otherwise would be. And, as an exchange access customer, AT&T supports that policy because it is the only way to eliminate the uneconomic subsidies that inflate the price of access (and therefore toll) services and artificially drives traffic from the public switched network to the Internet.

The remainder of these Comments is organized as follows. Section I describes the rapid transformation of and growth in the information services market, and explains why existing circuit-switched networks are neither designed nor priced to accommodate this

growth. Section II explains why cost-based pricing for access services would provide the proper incentives for the deployment of packet-switched networks and the efficient pricing of all information services. Section III explains why such a policy would not threaten the viability of ESPs, or give the LECs a windfall. And Section IV explains why the Commission has statutory authority to impose cost-based access charges on these entities.

I. PACKET-SWITCHED DATA SERVICES CARRIED OVER THE PUBLIC SWITCHED NETWORK ARE GROWING RAPIDLY, BUT THE EXISTING ACCESS NETWORKS ARE NEITHER DESIGNED NOR PRICED TO ACCOMMODATE THIS GROWTH.

The Commission first seeks comment on "the effects of the current system on network usage, incumbent LEC cost-recovery, and the development of the information services marketplace." NOI at ¶ 315. In fact, a broad array of new information services based on packet-switched technology are becoming increasingly available on a dial-up basis over residential and business narrow-band phone lines. The rapid growth of these new packet-switched services is most welcome, because of the innovative new features and functions that they provide. Their emergence, however, is also profoundly important because they are becoming directly competitive with traditional telephony. Thus, as the Commission notes, the growth of these services and the subsidies they enjoy presents questions that "concern no less than the future of the public switched telephone network in a world of digitalization and growing importance of data technologies." NOI at ¶ 311.

A. The Enhanced Services Market Has Grown Rapidly In Recent Years.

The recent growth rates of packet-switched data services have been dramatic. For example, Internet service revenue in the United States was expected to grow more than 200 percent from 1995 to 1996 (from $956 million to $3.1 billion).[9] Consumer online services revenues are also anticipated to grow 120 percent over the same period,[10] outpacing the expected increase in the number of subscribers to consumer online services during that same period.[11] It is estimated that there are currently more than 18 million Internet and consumer online subscribers,[12] and that there will be 23.3 million by year-end.[13]

These astonishing growth rates are expected to continue. Internet service revenue in the U.S. is expected to grow at a compound average growth rate of 76 percent from 1995 through 2000, which would lead to nearly $16.2 billion in revenue in 2000.[14] Revenues from U.S. consumer online services are predicted to grow at a compound average growth rate of 64 percent from 1995 to 2000, from $384 million to $4.6 billion.[15]

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[9] International Data Corporation (IDC), "U.S.-Based Worldwide ISP Market Overview 1996-2000" (IDC No. 12373), November 1996, p. 6.

[10] The Yankee Group, "Internet Service Provider Market Analysis," July 1996, ch. 1, p. 2.

[11] Consumer online services subscribers increased from 10.3 million in 1995 to 14.7 million in mid-1996 -- a 42 percent increase. *Id.*

[12] Information and Interactive Services Report, January 31, 1997, p. 1.

[13] IDC, "Interactive Services Bulletin, US Consumer Online Services Forecast 1997-2001," March 1997, Table 2.

[14] IDC, "U.S.-Based Worldwide ISP Market Overview 1996-2000," p. 6.

[15] Yankee Group, ch. 1, p. 2.

Consistent with recent historical trends, moreover, this huge revenue growth is expected to surpass the growth in subscribers. The number of Internet and consumer online subscribers is expected to grow to 43.2 million households by 2000 (a compound average growth rate of 33 percent).[16] Others have estimated that 40 percent of U.S. households will be online by 2000.[17] And the number of Internet users is almost doubling every year: it will grow from about 35 million worldwide today to 160 million in 2000.[18]

Another sign of the emerging stability in the Internet and on-line services market is the consolidation of Internet providers from 1525 in 1995 to 1310 in 1996. Analysts predict that there will be 95 such providers in the year 2000.[19] Moreover, all of the major interexchange carriers now provide consumer Internet and online services. The RBOCs, too, have begun or are about to begin providing such services.[20]

While the Internet and consumer online services providers have been achieving increased growth and approaching stability, other ESPs have already grown into mature,

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[16] *Id.* at ch. 1, p. 1.

[17] IDC, Interactive Services Bulletin, at 5. Most consumers already own or have access to the equipment necessary for Internet use. For example, more than two-thirds (71%) of all Americans have access to a computer at home or at work. Moreover, 45 percent have access to commercial or Internet-based online services at home or at work. Odyssey Report, Taking Off: The State of Electronic Commerce in America, Fall 1996, p. 7.

[18] Kevin Maney, "Online Community grapples with gridlock on info highway," USA Today, January 20, 1997, p. B1.

[19] Yankee Group, "Internet Service Provider Market Analysis," Executive Summary, p. i.

[20] Veronis, Suhler & Associates, "The Veronis, Suhler and Associates Communications Industry Forecast," August 1996, Ch. 14, Interactive Digital Media, p. 319.

highly profitable industries. For example, electronic business information service, which includes electronic messaging services, is already a multi-billion dollar business that is expected to grow at a compound average rate of 10 percent annually from 1996 to 2000.[21] Well-established companies such as Dow Jones & Co., Dun & Bradstreet, Equifax, Knight-Ridder and McGraw-Hill enjoy healthy revenue growth from such activities and generate millions of dollars in profits.[22] Remote dial-up access to corporate networks and databases is also a well-established business. Such services have been provided for years by such major companies as IBM and GEIS.

B. Packet-Switched Technologies Are Already Beginning To Compete With Traditional Telephony.

Moreover, packet-switched technology, and the equipment used with such technology, is quickly evolving to enable ESPs to offer telecommunications over their networks. Packet-switched networks carry digitized information -- *i.e.*, information converted into a common language of 0s and 1s. Virtually *any* form of information, however, can be converted into digital form. Thus, the same packet-switched communications network can deliver voice, data, or video to a customer; customers can use the same information appliance to receive voice, data and video, even in the same session; and the same information resource may create, distribute, and store information content. For example, with new product and service platforms that support multiple functions during

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[21] IDC/Link, "Business Information Services Forecast, 1996 to 2000," November 1996, p. 1.

[22] SIMBA Information, Inc., Electronic Information Report, December 20, 1996, p. 3.

a single "session," a consumer can simultaneously send and receive electronic mail, browse the World Wide Web, and complete a phone call by clicking on an icon on a computer screen.

For these reasons, packet-switched networks are rapidly leading to a convergence in all communications markets. Packet-switched technology is already making substantial inroads into traditional telecommunications markets. A good example is the international fax business. ESPs have a significant cost advantage in that market, both because of the access charge exemption, and because of their ability to bypass international settlements. As a result, businesses are quickly moving their fax traffic to the Internet. One analyst has noted that "five months ago, no one was talking about it. Now all of a sudden, there are 40 or 50 companies with new services for faxing over the Internet."[23] Analysts estimate that the Internet fax server and router market will grow to $38 million by 1998,[24] and AT&T

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[23] Brett Mendel, "Net Faxing Awaits Its Day," LAN Times, December 19, 1996, at 25 (quoting Peter Davidson, president of Davidson Consulting).

[24] Barbara DePompa, "New Life for the Fax Machine," Information Week, October 14, 1996, at 62, 64. This projected growth is already being realized. For example, FaxSav offers international fax service, with nodes in England, Hong Kong, France, Germany, South Korea, and the U.S. Rates are quoted at a 90 percent savings over the telephone network. Charlotte Dunlap, "Beating Ma Bell at own game; Internet Faxing aims to replace long-distance calls," Computer Reseller News, June 6, 1996. PSINet Inc. is building Internet fax software into its network, which will allow for centralized management of transmissions. The company claims savings of at least 40 percent over the "high cost of sending faxes over standard phone lines." Wall Street Journal Technology Brief, "PSINet Inc.: Internet Provider to Install Fax Software in Network," December 12, 1996.

estimates that 20-40 percent of U.S. originated international fax traffic will migrate to the Internet before 2000.

Similarly significant migration of basic telephony may be just around the corner. Numerous companies -- including Microsoft, Netscape, Intel, VocalTec, and NetSpeak -- have already placed Internet telephony products on the market. These products have been broadly publicized in articles in the New York Times,[25] Newsweek,[26] Business Week,[27] and other similar publications. These companies may have shipped as many as 1.5 million Internet telephony software packages.[28] Indeed, Microsoft and Netscape are beginning to embed such telephony options into their standard Web browsers; other companies provide the software for free on the Internet.[29]

Although Internet telephony has some limitations, they are being quickly overcome by technological innovation. For example, Internet telephony today usually requires both parties to be online, using a computer. But that is already changing. Voice gateways between the Internet and the Public Switched Network are being deployed that allow telephony over the Internet using regular telephones, without the assistance of a personal

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[25] Peter H. Lewis, "Free Long-Distance Phone Calls," New York Times, Aug. 5, 1996, p. D1; John H. Cushman, Jr., "Calling Long Distance, on a PC and the Internet," New York Times, May 19, 1996, p. 8.

[26] Steven Levy, "Calling All Computers," Newsweek, p. 43 (May 13, 1996).

[27] "Try Beating These Long Distance Rates," Business Week, p. 43 (April 22, 1996).

[28] *Id.*

[29] "Toll Free Net Calls," PC Computing, February 1997, pp. 130-32.

computer. Such technology includes signaling capability so that a call carried over the Internet can "ring" the called party's phone (or personal computer).

Once such technology becomes broadly available, large-scale migration of traffic from the public switched network to the Internet will be facilitated. While such migration may be the logical result of technological innovation, it is also being artificially stimulated by the large disparity in prices resulting largely from the access charge exemption. ISPs typically charge a flat fee of $19.95 per month to users. Using a conservative estimate of ten hours of usage per month per customer,[30] the customer effectively pays a retail price of $0.032 per minute, compared to the charges for "traditional" long distance calls, of which the switched access alone is about $0.05. (On a purely incremental basis, the retail price of such telephony services over the Internet is zero.) These prices are likely to induce many "traditional" long distance customers to switch even where the Internet is not the most efficient option. Thus, it is predicted that today's estimated 400,000 Internet telephony users could swell to 16 million by the end of 1999.[31] Indeed, Probe Research estimates that 16 percent of U.S. long distance traffic will migrate to the Internet by 2000.[32] And as many

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[30] In 1996, the average time online was 12.1 hours per month. Newsweek, September 23, 1996, p. 14.

[31] PC Week, December 12, 1996.

[32] John W. Verity, "Calling All Net Surfers," Business Week, August 5, 1996, p. 27.

as 12.5 billion long distance minutes of use will be carried over packet-switched networks by 2001 -- a compound average growth rate of 137.9 percent over current levels.[33]

Such large-scale migration of traffic raises many issues. Although the demand for high speed data services is growing by leaps and bounds, the local networks capable of supporting such services have not emerged. Therefore, ESPs and their customers continue to use the public switched network inefficiently, and ESPs continue to invest heavily in infrastructure (*e.g.*, modems) to support more traffic over the public switched network. Moreover, flat-rate pricing has given ESPs an artificial economic advantage that only reinforces their incentives to use the network in an inefficient manner. So long as traffic-sensitive local switching and transport costs are being recovered through flat-rate business line charges, the incentive to load the maximum amount of usage onto the network will continue, even as flat-rate pricing provides no incentive to the incumbent LECs to upgrade their networks to accommodate additional traffic.

The 1996 Act has made these concerns especially urgent. As the local exchange and exchange access markets are opened to competition, new entrants can be expected -- and should be encouraged -- to deploy alternative facilities-based networks. The current irrational pricing system, however, sends incorrect signals, not only to ILECs, but also to competitive local exchange carriers ("CLECs"), that discourages the deployment of data networks, which must compete with the below-cost access the ESPs currently receive.

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[33] IDC/LINK, "Residential Broadband Services, Internet Telephony: An Alternative Dialtone?," January 1997, p. 1.

II. REQUIRING ESPs TO PAY COST-BASED CHARGES FOR NETWORK USAGE IS NECESSARY TO ACHIEVE THE COMMISSION'S TWIN OBJECTIVES OF FACILITATING THE DEVELOPMENT OF HIGH-BANDWIDTH NETWORKS AND PRESERVING EFFICIENT INCENTIVES FOR INVESTMENT AND INNOVATION IN THE EXISTING VOICE NETWORK.

The solution to these anomalies, and a necessary condition to ensure the proper incentives for the efficient development of both the information services market and the networks of the future to support that market, is to require *all* users of the local network, including ESPs, to bear their fair share of their costs of using the local network. Such a policy is essential if the Commission is to achieve its stated objectives in this proceeding, namely, "facilitat[ing] the development of the high-bandwidth data networks of the future, while preserving efficient incentives for investment and innovation in the underlying voice network." NOI at ¶ 311.

A. Cost-Based Network Charges Are Necessary To Encourage Prudent Investment In Building The Packet-Switched, Higher-Speed Networks Of The Future.

First, cost-based pricing is necessary to provide the correct incentives for investment in the packet-switched local networks that are efficient for the delivery of packet-switched services. The ILECs' existing networks are circuit-switched networks that were designed primarily for voice traffic. Although these networks can carry data traffic, they are not the most efficient networks for those purposes. For example, during an Internet session, the circuit-switched connection must remain open for the entirety of the session, even though data are being transmitted only a small fraction of that time. *Cf.* NOI at ¶ 313.

A more appropriate solution -- and one that would facilitate the broader availability of packet-switched services -- would be the deployment of high-speed, packet-switched local networks. Such networks could efficiently route data packets from many users without the need to tie up individual switching and transport facilities, as is required in circuit-switched networks.

The access charge exemption, however, creates powerful *disincentives* to build or use such alternative packet-switched networks. Because of the exemption, ESPs today are using traffic-sensitive network facilities but paying for them on a flat-rate basis. As a result, neither the incumbent LECs nor prospective competitive LECs are receiving accurate economic signals that would encourage them to upgrade their existing networks -- or to engineer their planned networks -- to handle traffic more efficiently.[34]

In light of the Commission's (and Congress') overarching goals of opening up the local exchange and exchange access markets to competitive entry,[35] it is particularly important for the Commission to establish market-based rules that send the appropriate signals to potential competitors. Continued below-cost pricing of ILEC network facilities for some users subsidized by higher prices for others will make it *less* likely -- not more likely -- that the efficient packet-switched networks of the future will be built.

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[34] Moreover, to the extent the LECs perceive that they are not being compensated for ESP traffic, that simply increases their incentives to keep access charges above cost as a source of cross-subsidies for the costs imposed by the ESPs.

[35] *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Notice of Proposed Rulemaking, 11 FCC Rcd. 14171, 14172-73 (1996).

A LEC's incentive to build an alternative network depends largely upon the demand a LEC expects for service on that network. But because the existing network is a substitute for the new network -- albeit an imperfect one -- demand for services on the new network necessarily depends upon the price being charged for service on the old network. And if that price is artificially low -- as it undoubtedly is because of the access charge exemption -- this will artificially suppress demand for service on the new network, thereby reducing both the ILECs' and CLECs' incentives to build a new network.

This is why the Commission should require ESPs to pay cost-based local network charges. The Commission, moreover, should do so promptly because the deployment of alternate networks will take years, and the sooner the pricing system is rationalized, the sooner companies can make rational business decisions to build such networks. Such action is by far the most effective means of encouraging the LECs to "install [] new high-bandwidth access technologies." NOI at ¶ 313. It would be far more effective and defensible than establishing any kind of mandated subsidy scheme in which non-ESPs subsidize the construction of "data-friendly" networks to be used for ESPs' packet-switched services. The Commission should not adopt such a scheme. The proper course is to establish all rates for exchange access at cost-based levels, and allow the marketplace to find and construct the most efficient networks.

Nor should the Commission pick and choose among possible technologies, or mandate the construction of particular networks based on particular technologies. Several data-friendly technologies already exist today. However, there will be a need for multiple

network solutions involving loop, switching, and transport, because of the inherent limitations of each technology. These technologies vary greatly in terms of speed, cost, technical maturity, availability for implementation, reliability, and limits on growth. For example, turning to new generation loop technologies, Integrated Services Digital Network ("ISDN") offers up to 128 Kbps speeds to the home or office over existing narrow-band local loop, and therefore could be widely deployed. Coverage is not universal, however, because of limitations of plant layout and physical loop distances. By contrast, Local Multipoint Distribution Service (LMDS) offers significant two-way voice, data and video delivery, but it is expensive and its coverage is highly limited by physical terrain. Another technology, Digital Subscriber Lines ("DSL"), offers digital communications over existing copper loops, and in one of its three formats (High bit-rate, or "HDSL") it operates at speeds of 2 Mbps. DSL technology is very expensive to deploy (*i.e.*, estimates are $1500 to $3000 per customer), and it suffers from the same limitations as ISDN in that load coils and bridged-taps must be removed from the local loop in order to maximize its capabilities.[36] Similar advantages and disadvantages exist for packet switching and transport as well.

Each of these technologies has advantages and limitations, and indeed, future networks will likely require some combination of a number of these technologies. Similarly, each technology makes possible a different set of features, and therefore which technology wins out will depend on what features customers will want and their willingness

[36] A table comparing the various alternative access technologies is appended as Attachment 1.